Assessment for Learning and Development in K-3

A REPORT BY THE K-3 NORTH CAROLINA ASSESSMENT THINK TANK

2013

North Carolina has long been a leader in education innovation and is poised to lead in early elementary school reform through a new plan to develop and implement a developmentally appropriate formative assessment process for Kindergarten through third grade.

ASSESSMENT FOR LEARNING AND DEVELOPMENT IN K-3

In response to a mandate by the North Carolina State Legislature and the requirements of the Race to the Top-Early Learning Challenge Grant, NC Superintendent June Atkinson convened the K-3 Assessment Think Tank which included NC school teachers, parents, scholars representing seven NC universities, and additional stakeholders. The group was charged with proposing a plan to improve early elementary school learning and instruction through more efficient and effective use of student-centered assessments. Over a nine-month period, the Think Tank reviewed scientific findings and best practices and solicited input from a wide array of stakeholders, including a survey of over 2,500 NC teachers and consultation from over 60 state and national scholars and education leaders. This report summarizes the Think Tank's findings, its proposal for an innovative process to improve learning, and its recommendations for next steps.

BACKGROUND

From kindergarten entry through third grade, the **early elementary school years represent a pivotal period in educational development**. Achievement gaps that grow during the years prior to kindergarten are either solidified or eliminated during the primary grades of elementary school (Graves, 2006; Reynolds, Ou, & Topitzes, 2004). Education policy must increase its emphasis on student learning during this critical period in a way that recognizes each child's developmental needs.

In order to optimize student learning, teachers need to utilize a **formative assessment process that identifies strengths and areas for growth for each student in five domains of learning.** This process is already used by master teachers and has been shown to improve learning outcomes (Black & William, 1998; William & Thompson, 2007). This process of assessment for learning and development must attend to the whole child, including the child's culture, family, health, and early childhood experiences. This assessment should be an integral part of the instruction and learning process.

Input from North Carolina teachers indicates that they are willing and able to implement a formative assessment process, provided they are given resources to strengthen, support, and guide them. The implementation plan must include professional development, coaching, and support from leadership.

PROPOSAL FOR ASSESSMENT FOR LEARNING AND DEVELOPMENT IN K-3

The Think Tank proposes a formative assessment process that engages teachers and students with input from parents and families, school support staff, early childhood programs, and health care providers. This assessment process will incorporate multiple forms of evidence, such as observations, student work samples, conversations, and embedded instructional tasks. It is intended to be ongoing and an integral part of the instructional and learning process that teachers and students use to guide teaching and learning. It will be based on claims about student learning in five inter-related domains of learning included in North Carolina's definition of school readiness (Ready for School Goal Team, 2000): **Approaches to Learning, Cognitive Development, Emotional-Social Development, Health and Physical Development, Language Development and Communication.**

RECOMMENDATIONS AND NEXT STEPS

The Think Tank anticipates that the formative assessment process will lead to improved learning for all children provided the following recommendations are implemented:

1. A Design Team should be established to craft learning progressions, performance descriptors, assessment targets, and assessment means to transform the Think Tank's claims into an assessment that will be a usable instructional and learning resource. The Design Team shall meet with the Think Tank in September 2014 for an update on progress.

2. Design a pilot process that includes a representative sample of students from schools across diverse regions of the state to ensure that it will be accessible to and valid and appropriate for the greatest number of children.

3. Devise strategies to ensure that major stakeholders, including parents, teachers, administrators, health care providers, and early childhood leaders, are an integral part of the design and implementation process.

4. Utilize technology to support the assessment process and to facilitate data collection and utilization.

5. Work collaboratively with LEAs to plan and deliver professional development that is consistent with research; this should include demonstration, practice, feedback, coaching, and ongoing support.

Professional development will be critical, not only for teachers, but also for administrators, curriculum specialist, coaches, and others who support teachers in the formative assessment process.

6. Provide both human and technical resources that are sufficient to strengthen, support, and guide teachers and students as they collaborate in the formative assessment process.

7. Following a validation pilot, implement the assessment process statewide in a carefully sequenced manner that ensures sufficient monitoring and supervision to ensure quality and fidelity in the process.

8. Design the K-3 formative assessment to achieve its purpose – to inform teaching and learning on a daily basis. It will not be designed for accountability or high-stakes purposes, nor will it be a valid means of evaluating teachers or schools or for accountability purposes.

9. Devise systems and structures to ensure iterative improvement cycles that increase the usability and effectiveness of the formative assessment process in the future.

CLAIMS

The Think Tank proposes the following claims, or learning goals, as the foundation for the formative assessment process:

Approaches to Learning

1. Students can effectively solve problems by defining goals, describing steps, and evaluating alternative strategies in both academic and social interactions.

2. Students can maintain focus and persevere to accomplish collaborative and individual tasks whether those tasks are chosen by them, or assigned to them.

3. Students can demonstrate curiosity by seeking opportunities – whether independently or in collaboration with peers and teachers – to extend their knowledge.

Cognitive Development

1. Students can use content-independent abilities and strategies as well as content-specific skills, processes, and approaches to solve problems and acquire information.

2. Students can make connections to prior learning, construct knowledge, and demonstrate their understanding using multiple modes of expression.

3. Students can come to understand themselves as learners and acquire dispositions (attitudes, beliefs, and values) that support their academic engagement.

Emotional-Social Development

1. Students can identify and communicate about emotions in themselves and others.

2. Students can talk about and use strategies to regulate responses to their own emotions.

3. Students can form and sustain healthy relationships with adults and peers.

4. Students can use appropriate social skills to interact with adults and peers in school.

Health & Physical Development

1. Students can demonstrate conceptual knowledge to support healthy behaviors and the reduction of health risks.

2. Students can develop skills that contribute to healthy behaviors and reduction of health risks.

3. Students can demonstrate competencies in motor skills and movement patterns.

Language Development & Communication

1. Students can use and continue to develop effective listening and communication skills (e.g. verbal and non-verbal) for a range of purposes, audiences, and settings/contexts in increasingly complex ways.

2. Students can acquire and integrate vocabulary, concepts, and the structure of language in increasingly complex ways.

3. Students can acquire the foundational skills for reading and integrate these skills for comprehending increasingly complex texts.

4. Students can acquire the written communication skills that empower students to express their ideas, opinions, and knowledge for a range of purposes and audiences.

CONCLUSION

Understanding what children know and are able to do is critical to teachers' efforts to plan instruction that meets the needs of all children. The Think Tank strongly encourages the Department of Public Instruction to design an assessment process for use in kindergarten through third grade that utilizes strategies appropriate for young children and occurs in the context of instruction and learning. This provides the best opportunity for children to demonstrate what they know and are able to do and to help each child reach challenging and achievable goals that contribute to his/her ongoing development and learning.

ASSESSMENT FOR LEARNING AND DEVELOPMENT IN K-3

RATIONALE

North Carolina is a national leader in early education programs. Its heralded Pre-K program is the most recent in a long history of innovation. North Carolina has also led with secondary school programs and 3-12 evaluation efforts, such as Early College and the ABCs. Now, more than ever, a major focus of education must turn to the early years of elementary school (kindergarten through grade 3) when children are poised to begin a trajectory toward success in school and life. A growing body of research has shown that providing a strong foundation during the Pre-K – Grade 3 years reduces the achievement gap between children from low-income households and those from middle-class households (Graves, 2006; Reynolds, Ou, & Topitzes, 2004). Furthermore, children develop higher levels of academic achievement when programs are guided by a Pre-K – Grade 3 philosophy and provide continuity and consistency of learning experiences and expectations (Graves, 2006). The early elementary school years are, therefore, a crucial period in children's educational development. Preparing children to master critical content in secondary schools and graduate as globally competitive students requires starting from the very beginning of formal schooling. Programs serving children from Pre-K – Grade 3 must ensure children acquire a strong foundation by addressing the needs of the whole child in this age group in ways that are culturally, linguistically, and developmentally appropriate.

Thus, with a shared understanding that the success of the education system depends on a solid foundation during these early years, North Carolina is once again poised to lead through innovation. With authorization from the North Carolina General Assembly and financial support from the Race to the Top-Early Learning Challenge grant, the North Carolina Department of Public Instruction's Office of Early Learning is developing a formative assessment process for K-3.

ASSESSMENT IN NORTH CAROLINA

The North Carolina State Board of Education and Department of Public Instruction has, as one of its priorities, the development of a comprehensive K-3 assessment system that informs instruction and supports students' academic success by identifying the needs of each child. This report speaks to one component of a comprehensive assessment system, formative assessment, which has been shown to have a powerful impact on student learning (Marzano, 2006). Teachers' use of formative assessment has been shown to increase student engagement and produce some of the largest gains in learning ever reported for education interventions, with the most significant gains found among low achieving students (Black & William, 1998; William & Thompson, 2007).

In response to the scientific findings, North Carolina's K-3 assessment will be formative in nature – designed to inform learning and drive daily instruction. It will align with the Department of Public Instruction's definition of formative assessment: "a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes" (McManus, 2008, p.3). The assessment will provide teachers with resources that will help them understand the progression of learning in five areas of development. In addition, it will provide teachers with ways to gather and analyze evidence to identify where each child is on the learning progression in relation to instructional goals. The K-3 formative assessment process will provide multiple ways for children to demonstrate understanding by collecting evidence gathered through daily observations, conversations, work samples, and tasks embedded in instruction. This evidence will be used by teachers and students to guide learning and teaching.

The K-3 formative assessment process will begin at kindergarten entry. This kindergarten entry assessment will be the first administration of the broader K-3 formative assessment process and occur within the first sixty days of enrollment. The data gathered at entry into kindergarten will be used to generate a Child Profile and entered into the state's longitudinal data system.

The proposed K-3 formative assessment must be distinguished from summative assessment. While summative student assessment is important for accountability, the purpose of high-stakes standardized testing is specific to measuring student achievement and informing teacher and program evaluation. Therefore, the data produced from summative assessments do not fit the purpose of informing day-to-day instructional decision-making. In contrast, the primary purpose of formative assessment is to provide information that can be used as feedback for teachers and students to guide teaching and learning. Formative assessment strengthens, supports, and guides effective learning and teaching in real time. The K-3 formative assessment will not produce the kind of data used for high-stakes decision-making. Therefore, it will not be used for accountability purposes to evaluate the effectiveness of schools, K-3 teachers, or early childhood programs.

EMPHASIZING THE WHOLE CHILD

Although scholars, educators, and policy leaders sometimes parse reports about students into separate silos that address literacy, mathematics, and other subjects, children learn and develop as whole beings. A child's approach to learning affects that child's physical well-being, which is necessary for language and cognitive learning and social-emotional development, which reciprocally affect that child's evolving approach to learning (Dweck, 2006). Thus, progress in one domain does not occur in isolation; it influences the development in other domains (Copple & Bredekamp, 2009).

The benefits of a more holistic perspective can extend beyond content areas and developmental domains and apply to culture, race, gender, and ethnicity as well. All aspects of a child's learning and development are important to lifelong success, and when fully developed, support children for the current and future challenges and opportunities of our global world (ASCD, 2012).

Given the integrated nature of development and learning across domains, supporting children in all domains more adequately promotes increased positive outcomes in student achievement. Therefore, the five inter-related domains of learning included in North Carolina's definition of school readiness (Ready for School Goal Team, 2000) should constitute the focus of education during the early elementary school years and will serve as the organizing structure for the K-3 formative assessment process. These five domains include the following:

1. Approaches to Learning
2. Cognitive Development
3. Emotional-Social Development
4. Health and Physical Development
5. Language Development and Communication

In addition, the content of the K-3 formative assessment will be aligned with both North Carolina Foundations for Early Learning and Development, and the *Standard Course of Study* (Common Core State Standards and North Carolina Essential Standards). Although it will not address every standard, it will assess the most essential knowledge, abilities, and approaches toward learning.

PARTNERING WITH FAMILIES

When families are actively involved in their children's education, children develop a more positive attitude toward school and perform better academically; these benefits are consistent across all income and education levels, as well as cultural backgrounds (Allen & Tracey, 2004). When families feel good about the relationship with their children's school(s), they have improved attitudes toward education and are more likely to hold higher expectations for their children which can lead to improved child outcomes (Fan & Chen, 1999). However, the extent to which families become actively engaged with their child's school relies more on the actions of teachers than on the particular characteristics of families including: race, ethnicity, education, family education, or marital status (Epstein, 1996). Finding ways to reach out and connect with families, caregivers, and other adults important in the life of a child gives teachers and schools the opportunity to learn about the child, his/her family, and the community in which the child resides. Such information enables teachers to better plan educational experiences that are appropriate for the child. When school personnel actively reach out to families and caregivers, welcome them to the school, honor their contributions, and connect with them through the children, relationships between families and school staff are strengthened (Iruka & Barbarin, 2009; Mapp, 2003).

Acknowledging the role parents play as their child's first and most consistent teacher, the K-3 formative assessment process will be designed to enable parents to contribute to the assessment process and share the knowledge they have about their child with the teacher. This feature will enhance the relationship between teachers and families, promote two-way communication, and strengthen home–school partnerships.

ASSESSMENT DEVELOPMENT

As a first step in the process of developing the K-3 formative assessment process, State Superintendent Dr. June Atkinson convened a group of education leaders, teachers, parents, and child development scholars to serve on a *Think Tank* responsible for providing a vision for this endeavor. The Think Tank worked from January to October of 2013 and sought input from key stakeholders throughout the process by surveying over 2,500 teachers and inviting over 60 external reviewers to scrutinize their work.

Dr. Atkinson charged this group to consider which aspects of the five domains of development and learning were most important to address during the early elementary years. The Think Tank developed *claims* – broad goals that identify the knowledge, abilities, and approaches toward learning that are most essential for children to develop during kindergarten through third grade. These claims will be used to guide the development process and frame the areas that are addressed in the formative assessment. The next section of this report contains the claims for student learning as developed by the Think Tank. A rationale, informed by current research, describes the importance of the learning and development embedded within each of the claims.

INTEGRATED NATURE OF TEACHING, LEARNING, AND ASSESSMENT

In an effort to improve student achievement, assessment systems continue to be a national and state focus. Although important for a variety of purposes, assessments that are most prevalent in schools today are administered within specified time during which teaching stops to accommodate assessment. As a result, assessment in general is often viewed by the classroom teacher as something separate from – or *in addition to* – teaching, serving a goal other than informing daily instruction and learning. However, when a *formative assessment process* is implemented well, it supports a teacher's ability to use assessment as a *process of inquiry and action* (Heritage, 2013) during instruction. The teacher is able to uncover a student's understanding in the midst of teaching and work with the student to make decisions that inform the appropriate next steps in his/her learning in the moment. This places the focus on identifying students' strengths and differentiating instruction to support growth and improvement. Attending to a student's current understandings and skill level during instruction allows a teacher to scaffold learning within the student's Zone of Proximal Development by providing timely descriptive feedback that will help a student make adjustments to his/her learning strategies (Popham, 2008). As a result, the teacher and students work together in an effort to *close the gap between students' current understanding and the desired goals* (McManus, 2008). In this way, the formative assessment process actively engages the students in their learning rather than them simply being passive recipients of instruction.

Thus, the goal of the proposed K-3 formative assessment process is to enrich students' learning and development *during* teaching and learning. It will be designed to focus on identifying students' strengths, while providing teachers and students with a variety of evidence (e.g., observations, dialogues, work samples) in five domains of learning and development that will allow teachers to make daily adjustments in instruction and students to make adjustments in their learning strategies. Together – within an environment that builds trust, respects differences, and encourages transparency – the teacher and student form a dynamic team engaged in a process of learning.

DEFINITION

The Approaches to Learning domain addresses how children learn and includes children's attitudes toward, and interest in, learning. It reflects behaviors and skills such as curiosity, planning, flexibility, motivation, focus, and persistence.

The claims regarding Approaches to Learning involve skills that make it possible for children to learn and to steward their own development. These skills are crucial to the achievement of almost all the instructional objectives laid out in the North Carolina Standard Course of Study. Because these skills are so broad, it would be inappropriate to link any single claim in this section to any single learning standard; instead, these claims, taken together, can be understood as addressing fundamental conditions underlying the standards.

The skills, capacities, behaviors, and tendencies that compose a student's approach to learning are critical to success in school. New research indicates that these characteristics are not fixed when a child enters kindergarten; they are built through quality instruction and shaped by a student's daily experiences in and out of school.

OVERALL RATIONALE

There is empirical evidence linking the capacities and skills in our claims to performance in specific subject areas, including the domains enumerated in the standard course of study. Together, these capacities and skills encompass a student's approach to learning, which Hyson (2008) has described as the *behaviors, tendencies, or typical patterns that children use in learning situations*. This includes their intrinsic motivation to learn, interest and joy in learning, engagement, persistence, planning, ability to focus and control attention, flexible problem solving, inventiveness, and tolerance for frustration. Each of these relate to the following capacities – metacognition, executive functions, self-regulation, and creativity.

1. *Metacognition* refers to a student's ability to understand and reflect upon the process by which he or she learns.
2. *Executive functions* are the processes a person uses to coordinate his/her cognitive resources in pursuit of a goal.
3. *Self-regulation* is closely related to executive functioning and describes a student's ability to master his/her own behaviors and tendencies.
4. *Creativity* involves bringing concepts from many different areas together, in a free-flowing way, in an effort to see if they can be combined to generate a novel idea while simultaneously narrowing possibilities down and adjusting ideas until the student has one that is plausibly appropriate.

Students need to exercise their capacities for executive functions and self-regulation in order to filter the stimuli they encounter in a busy classroom. Those who have trouble identifying important information or ignoring distractions have difficulties in complex classroom settings (McClelland et al., 2007).

Students use their working memory skills. Working memory is an executive function that involves holding information in mind and manipulating it to select and hold relevant information (as one does, for example, when adding a pair of two-digit numbers without using a pencil) so that they can understand, process, and act upon what they are meant to learn at school (Blair & Razza 2007, McClelland, et al., 2007). They use working memory for learning in subject areas by holding information in mind, rehearsing and manipulating it, and then consolidating it with other concepts they have learned.

They exert inhibitory control. Inhibitory control is an executive function that involves overriding an impulse to do something counterproductive as when they clean up materials before starting another project, raise their hand before talking, and wait their turn before participating during group activities.

Strong capacities for executive functions and self-regulation are consistent statistical predictors of good performance in school (Blair & Razza, 2007; Duncan et al., 2007). Students observed by teachers to be strong on these dimensions early in the Pre-K-Grade 3 period performed better and learned more in reading and math throughout elementary school (Fantuzzo, Perry, & McDermott, 2004; Hair, Halle, Terry-Humen, Lavelle & Calkins, 2006; McClelland, Acock, & Morrison, 2006; Blair & Razza, 2007; McClelland et al., 2007; Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010; Farris, Burke Lefever, Borkowski, & Whitman, 2013). When researchers conducted an experiment using teaching tools that specifically strengthened executive functioning capacity, they saw improvement not only in students' executive functioning but also their math performance (Holmes, Gathercole, & Dunning, 2009; Raver et al., 2011). Many attention and behavior problems that interfere with students' ability to learn are related to a diminished capacity for executive functions, self-regulation, or metacognition (Kreppner, O'Connor, & Rutter, 2001; Vuontela et al., 2013).

Curiosity is an important element of the learning process that may be defined *as a positive emotional- motivational system associated with the recognition, pursuit, and self-regulation of novel and challenging opportunities* (Kashdan, Rose, & Fincham, 2004). Curiosity sparks proactive, intentional behaviors to stimuli (Kashdan, Rose, & Fincham, 2004) and must be considered when promoting desired behaviors including self-regulation, problem solving, and perseverance.

Metacognitive development is the process wherein a person learns about how he or she learns. For example, when a student figures out, or is taught, that when it comes to learning a new word, trying to use it properly in a sentence is a better strategy than simply reading its dictionary entry over and over again, that student has gained a metacognitive skill. Metacognitive skills are closely related to all of these behaviors, tendencies, and outcomes (Cross & Paris, 1988; Nelson & Narens, 1990; Schraw, 1998). Decades ago, scholars believed that children did not begin to develop substantial metacognitive capacity until near the end of the K-3 period. Now, there is mounting evidence to contradict that belief. Psychologists have observed children as young as six years beginning to articulate an appraisal of their own approach to problem-solving (Whitebread et al., 2009).

Furthermore, it is important to note that all of these capacities and skills are related to success far beyond the K- 3 period. Metacognitive skills are related to the ability to continue learning new skills and concepts into adulthood (Bjork, Dunlosky, & Kornell, 2013). Diminished capacities for executive functions and self- regulation predict a host of negative outcomes including substance abuse, problem gambling, low-quality interpersonal relationships, and crime (Colvert et al., 2008; Moffitt et al., 2011; de Ridder et al. 2012; Diamond, 2013).

Finally, we emphasize the substantial empirical evidence that all of these skills can be taught. In a randomized experiment, Adele Diamond and others (2007) found that curriculum changes were sufficient to improve preschoolers' executive functioning capacities; similar results have been observed at the other end of the K-3 period (Holmes, Gathercole, & Dunning, 2009). Curriculum adjustments have also been observed to improve metacognitive skills during the K-3 period (Cross & Paris, 1988).

CLAIM 1 – Students can effectively solve problems by defining goals, describing steps, and evaluating alternative strategies in both academic and social interactions.

Example
An example of evidence in favor of this claim might be revealed in a student's approach to building a self-supporting structure from blocks. A student who had mastered the skills encompassed in this claim would be able to describe (using pictures, spoken, or written language), before he/she began building, what the final structure would look like and how he/she would use blocks of various sizes or shapes in order to accomplish the task. Along the way, the student would be able to identify whether his/her original plan was likely to lead to the structure he/she had originally envisioned, and if not, then he/she would be able to readjust the plan as necessary. With older children, the same example would apply in the context of using other instructional manipulatives, such as Lego Robotics.

Rationale
This claim refers to students' capacity to form and pursue goals and is closely related to the concepts of creativity and executive functions. *Executive functions* are the processes a person uses to coordinate his/her cognitive resources in pursuit of a goal. An important learning tool across subject areas is the ability to decompose a problem into component steps, to keep track of progress through those steps, and to reassess and adapt along the way as necessary. This capacity to develop and carry out a sequential plan of action in pursuit of an explicit goal comprises executive functioning skills that are fundamental to learning and to academic achievement and social skills (Zelazo, Carlson, & Kesek, 2008).

CLAIM 2 – **Students can maintain focus and persevere to accomplish collaborative and individual tasks whether those tasks are chosen by them or assigned to them.**

Example

Evidence in favor of this claim might be observed during whole group or small group time for a student who has little interest in the group's activity. In such a situation, a student might feel a persistent temptation to engage in other activities. A teacher might offer a student options for behaviors to channel that temptation while discouraging other behaviors (e.g., the student might be allowed to pace or fidget and be discouraged from disturbing his/her neighbors). A student who had mastered the skills encompassed in this claim would be able to stay engaged in the group's undertaking. Sometimes, students may face the same kind of temptation when encountering adversity accomplishing a task of their own devising (e.g., a project they start proves more challenging than they had anticipated and they are tempted to abandon it) and when they are pursuing tasks assigned to them (e.g., a lesson does not immediately capture their interest and they are tempted not to invest themselves in it). In these types of situations, in order to be effective stewards of their own development, students need to be able to marshal the cognitive and emotional resources necessary to stay engaged despite the countervailing urge.

Rationale

This claim refers to students' ability to master their own behavior and is related to the concepts of self-regulation and inhibition. Students' capacities to overcome temptation and to persevere are critical to their own learning and to maintaining an effective classroom environment. Self-regulation has been shown to be one of the best predictors of academic and social skills in preschool and elementary school (Blair & Razza, 2007; Duncan et al., 2007; Fantuzzo, Perry, & McDermott, 2004; Farris et al., 2013; Hair et al., 2006; Li-Grining et al., 2010; McClelland, Acock, & Morrison, 2006; McClelland et al., 2007; Moffitt et al., 2011), and improved self-regulation skills demonstrated accompanying gains in academic and social skills.(Holmes, Gathercole, & Dunning, 2009, Raver et al., 2011).

CLAIM 3 – **Students can demonstrate curiosity by seeking opportunities – whether independently or in collaboration with peers and teachers – to extend their knowledge.**

Example

An example of evidence in favor of this claim might be reflected in a student who dovetails assignments or activities in order to build on a principle or theme he/she finds interesting. An example would be choosing a self-selected activity that involves caring for a flowering plant, after developing an interest in the botany of angiosperms from a science lesson. Another example is a student intrigued by a story about ants and grasshoppers, and on his/her own or at the suggestion of a teacher, extends that interest either by using a magnifying glass to observe these insects on the playground, requesting books related to this topic, or searching online to learn more about the insects. This kind of outcome could result from the initiative of the student or in response to prompting from a teacher.

Rationale

In addition to its explicit reference to curiosity, this claim also refers to the concept of creativity. *Creativity* involves a combination of divergent and convergent thinking. When thinking *divergently*, a student will try to bring concepts from many different areas together, in a free-flowing way, in an effort to see if they can be combined to generate a novel idea. Simultaneously, however, the student must also be ready to think *convergently* by narrowing down possibilities and adjusting ideas until he/she has one that is plausibly appropriate. Distinct from creativity is *curiosity* which refers to a student's openness to recognizing and engaging with new and challenging opportunities. Most important, this claim captures the general capacity of students to take a leading role in their own learning. Curiosity is important, because it motivates proactive and intentional learning behaviors which, in turn, results in the increased acquisition of academic and social skills (Kashdan, Rose, & Fincham 2004).

COGNITIVE DEVELOPMENT

DEFINITION

The Cognitive Development domain focuses on children's ability to acquire, organize, and use information in increasingly complex ways. In their search for understanding and meaning, young children play an active role in their own cognitive development. They begin to explain, organize, construct, and predict. These skills lay the cognitive foundation children need to both explore and understand increasingly sophisticated concepts and the world in which they live. They learn to apply prior knowledge to new experiences and use this information to refine their understanding of concepts as well as form new understanding.

OVERALL RATIONALE

Children's cognitive capabilities provide the foundation for learning that occurs in school and in life. These cognitive skills – including regulating attention, remembering, reasoning, and problem-solving – enable children to understand new information and apply it to new situations. Research indicates that strong cognitive skills positively affect educational outcomes (Raver, 2012; Evans & Rosenbaum, 2008; Duckworth & Seligman, 2005). Moreover, the continuing development of cognitive skills, as necessary for on-going academic mastery, depends upon active engagement in developmentally-appropriate education.

CLAIM 1 – Students can use content-independent abilities and strategies as well as content-specific skills, processes, and approaches to solve problems and acquire information.

As students apply these concepts, *content-independent abilities* are basic cognitive functions that are important for success in a broad array of tasks. These include the abilities to engage in tasks over a period of time, remember information long enough to complete an activity, process incoming information, inhibit responses to distractions, change their minds, multitask, categorize, and recognize and extend patterns. In the scientific and clinical literatures, these content-independent abilities are collectively referred to as executive functions, or more generally, as fluid-cognition (Diamond, 2013).

These content-independent abilities and strategies stand in contrast to *content-specific skills, processes, and approaches* acquired in the service of learning in specific content areas such as mathematics, language arts, science, social studies, physical education, and the arts. Examples of these skills, processes, and approaches include the following: connecting the experience of characters in a story to students' own lives, drawing facial expressions to represent emotions in art, using

a standard system of measurement, learning to observe the natural world, and learning to compare primary and secondary sources. Although initially a focus of instruction in a particular discipline, with practice and especially in the context of an integrated curriculum, many of these behaviors are generalized and can be used in a broad array of settings.

Rationale

It is well established that children exhibit substantial gains in the acquisition of content-independent skills throughout the early and middle childhood periods (Best & Miller, 2010; Garon, Bryson, & Smith, 2008). Not only do children demonstrate increased ability levels across this period (as evidenced by both increased accuracy and response speed in executive function tasks), but they also demonstrate a re-organization of content-independent abilities such that rudimentary skills that were relatively undifferentiated during the preschool period begin to fractionate in middle childhood to resemble the structure, though not necessarily the function, of the skills observed during adulthood (Shing, Lindenberger, Diamond, Li, & Davidson, 2010). The re-organization and optimization of fundamental abilities (e.g., inhibitory control, attention shifting) in early childhood facilitate the emergence of higher-order abilities including planning and problem solving (McCormack & Atance, 2011). Coincident with the development of content-independent skills and abilities is the acquisition of content-specific skills, processes, and approaches that result from students' graduated exposure to age-graded academic curricular content. The acquisition of content-independent and content-specific skills across early and middle childhood represent dynamic, mutually reinforcing processes that collectively provide children with the foundation to *learn how to learn*.

The co-emergence of content-independent and content-specific skills and abilities both result from and further promote brain development, which undergoes rapid developmental change from the prenatal period throughout childhood and into adulthood (Giedd et al., 1999; Shaw et al., 2006). Given the protracted course of development of the prefrontal cortex and prefrontally-mediated circuitry, which is strongly implicated in the acquisition and refinement of content-independent skills and abilities (Kane & Engle, 2002), formal schooling likely serves as a major basis for shaping critical aspects of brain growth. Indeed, the nature of the classroom environment in which children are embedded is of fundamental importance for the development of these skills.

A growing evidence base has also documented the importance of content-dependent and especially content-independent skills for predicting a myriad of long-term outcomes including social, educational, occupational, physical and mental health, and well-being outcomes (Heckman, 2007; Mischel et al., 2011; Moffitt et al., 2011).

There is also evidence that content-independent abilities are more powerful predictors of educational outcomes than is intelligence (Duckworth & Seligman, 2005). Moreover, content-independent and dependent skills are increasingly understood to be mechanisms through which early risk factors (poverty, being a racial minority) exert their effects on educational and occupational outcomes (Evans & Rosenbaum, 2008; Raver, 2012).

CLAIM 2 – Students can make connections to prior learning, construct knowledge, and demonstrate their understanding using multiple modes of expression.

From the perspective of the field of cognitive development, the *construction of knowledge* is understood to be an active and personal process that *goes beyond the information given* and involves the integration and interpretation of new information within the context of existing understanding. The new understandings that result from this process may include inaccuracies and misinterpretations that teachers should address in subsequent instruction. Further, when appropriate, students are able to communicate what they have learned using multiple *modes of expression* (e.g., through modeling, writing, drawing, or speaking).

Rationale
Making progress in terms of the acquisition of knowledge in each of the areas of the curriculum is seen as an active process in which the learner – no matter what the mode of instruction – builds on what is already known by making linkages between new information and prior understanding, as obtained both inside and outside of the classroom. Indeed, longstanding tenets of the cognitive developmental literature include the understanding that what is already known exerts a strong influence on what can be learned and is more important for task performance than age (Bjorklund, 1985; Chi, 1978; Chi, Glaser, & Farr, 1988; Ornstein & Naus, 1985).

Prior knowledge has been shown to impact all aspects of information processing – from monitoring and attending to key features of the environment, to encoding and storing information, to combining isolated bits of information into well-structured systems of knowledge in memory, to making inferences that enable learners to go beyond that which has been specified explicitly, and to retrieving what has been learned so that the information can be used effectively in a variety of tasks. What is already known thus can be seen as having a positive impact on children's learning and academic performance. As Bransford, Brown, and Cocking (2000) point out, much has been learned about the flexible use of structured knowledge by contrasting the performance of experts and novices in particular domains. Importantly, the knowledge systems of experts are highly organized, interconnected systems that: (a) enable deep understanding, (b) support meaningful transfer, and (c) require little attentional effort (see, e.g., Chi et al., 1988). However, it must also be noted that under some conditions knowledge structures can have a negative impact on performance, as when memory fades and misremembering is based on knowledge-driven expectations (Greenhoot, 2000; Ornstein et al., 1998) or when inferences lead to faulty knowledge representations (as in science) that interfere with subsequent learning (Bransford, Brown, & Cocking, 2000; Stein, Hernandez, & Anggoro, 2010).

Given the importance of knowledge structures for learning and school success, it must be emphasized that their growth and elaboration result in great part from children's own active information processing. Indeed, at every point in development, the acquisition of knowledge is a constructive process that results from each learner's individual interpretation and subsequent processing of information experienced both formally during classroom instruction and informally during everyday experiences (Piaget, 1983; Bransford et al., 2000). Over the course of the early elementary school years, children's knowledge becomes more extensive, better elaborated, and increasingly well structured (Chi & Ceci, 1987). With the development of organized knowledge systems and parallel growth in executive function (Zelazo, Carlson, & Kesek, 2008) and speed of information processing (e.g., Kail & Ferrer, 2007), children become better able to apply what they know in the service of cognitive tasks, including those that are important for classroom learning such as memory and study skills (Ornstein & Light, 2011). Hand in hand with this growth is the development of children's metacognitive understanding of the demands of cognitive tasks and of linkages between their own actions (e.g., focused attention and strategy use) that impact success in these endeavors (Schneider & Pressley, 1997).

Although prior knowledge generally increases with age and supports improved performance on a range of tasks, it is also likely that this growth is accompanied by errors that come to be incorporated into the knowledge systems of older children (Mestre, 1994). On the one hand, incorrect information may be acquired on the basis of interactions with peers, exposure to the media, or instruction that may on occasion be superficial or incorrect (see, e.g., Principe & Schindewolf, 2012). On the other hand, errors in understanding may be endogenous in that they can arise from faulty inferences that are supported by the enhanced information processing skills of older children (Brainerd & Reyna, 2012). Because continued cognitive growth is determined to a large extent by already established conceptual structures, errors that are incorporated into these structures may thus impose limits on understanding and need to be corrected for a more complete grasp of the material and its implications (Mestre, 1994). Such modification – i.e., continued learning – occurs when the student comes to realize the inconsistencies and gaps in his/her understanding. This awareness is often guided by the questions and prompts of the skilled teacher who probes for understanding during the course of developmentally appropriate instruction. This skilled teacher may also provide demonstrations that are designed to focus the learner's attention on inconsistencies and limitations in personal understanding that must be resolved for continued learning and mastery of the content (Stein et al., 2011).

In identifying the present state of a learner's understanding – so as to provide a context for continued learning – effective teachers have traditionally relied on an informal process of formative assessment. In the context of such an assessment process, much is to be gained by encouraging the use of multiple modes of expression such as the use of modeling, drawing, writing, and speaking within the classroom. These techniques may not only serve to illuminate the limits of children's understanding, but they may also be valuable in identifying their skills in applying information across contexts, thus allowing the teacher to observe the extent to which they are able to reach higher order levels of understanding (Anderson & Krathwohl, 2001; Shrager & Carver, 2012).

CLAIM 3 – Students can come to understand themselves as learners and acquire dispositions (attitudes, beliefs, and values) that support their academic engagement.

Students go beyond the mastery of content information as specified in the curriculum by coming to *view themselves* as inquisitive learners and to understand that their success in school arises to a large extent from their own efforts. The positive *attitudes* toward learning that they develop, along with a growing appreciation of their membership in a learning community, serve to support involvement in learning in the present and the future. Academic *engagement* includes not only on-task behavior and compliance with teachers' directives, but it also includes self-directed efforts at discovery and learning.

Rationale

The knowledge systems that students construct during the early elementary school years include representations of their own abilities as learners both in and out of school.

These representations – sometimes described as academic self-concepts (Kurtz-Costes & Schneider, 1994; Song & Hattie, 1984) – reflect children's understanding of their own academic strengths and weaknesses. Children's assumptions about the nature of intelligence and their expectations regarding the potency of their own efforts as learners are also reflected in these developing academic self-concepts.

The predominant current perspective on motivation (Dweck, 1999; Yeager & Dweck, 2012) indicates that students come to see intelligence as either fixed ("I'm just no good in math") or malleable ("I'll get better at it if I keep working"). Further, they come to attribute their relative successes and failures to their own efforts or to uncontrollable, unstable factors such as luck or task difficulty. These attributions are important because they influence children's developing attitudes and values about learning, including the extent to which they may choose to be persistent in their academic engagement, especially when confronting difficult challenges or failing to meet their goals. Such persistence results in more time on task, which in turn supports subsequent achievement.

Student engagement is vital for successful learning *in the here and now* and for the continuing development of children's beliefs, values, and attitudes about learning. In this regard, the early elementary school years are vital for the growth of personal attributions that support continued success in school and, moreover, life-long learning (Wigfield, Cambria, & Eccles, 2012). *Data* for these personal attributions often include teachers' verbal and nonverbal feedback as well as the results of more formal assessments. Formative evaluation provides the opportunity for teachers to determine students' emerging conceptualizations of their own capacities and to foster the development of effort attributions that are viewed as most adaptive for continuing success in school.

EMOTIONAL-SOCIAL DEVELOPMENT

DEFINITION

The Emotional-Social Development domain includes children's feelings about themselves and also addresses their ability to relate to others. Learning to manage and express emotions is also a part of this domain. Children's development in this domain affects their development in every other domain. For instance, children who develop a positive sense of self are more likely to try new things and work toward reaching goals. They tend to accept new challenges and feel more confident about their ability to handle problems or difficulties that may arise.

OVERALL RATIONALE

It is the essential task of teachers of young children to support their children's social and emotional development. Without attention to this important aspect of development, children's success cannot be optimized. Simply stated, healthy emotional development and positive relationships are the foundation to children's ability to explore materials and actively engage in learning, and student-student relationships are critical in fostering students' commitment to school and promoting academic success (Blum & Libbey, 2004; Hamre & Pianta, 2006; Hawkins, Smith, & Catalano, 2004; Jennings & Greenberg, 2009). The time and effort teachers put into creating a classroom community centered on caring and mutual respect pay dividends far beyond the initial investment (Hamre & Pianta, 2001; Pianta & Stuhlman, 2004).

Social development that promotes learning occurs in environments where teachers intentionally support positive interactions. Classrooms facilitated by skillful educators can provide a place for children to identify and communicate about emotions in themselves and others, verbalize and use strategies to regulate responses to their own emotions, form and sustain healthy relationships, and use appropriate skills to interact with adults and peers. This means that teachers must work consistently to establish positive, prosocial environments characterized by mutually reciprocated relationships, respect, and cooperative work. Children's social-emotional development influences all other areas of development. Cognitive, motor, and language development are all greatly affected by how a child feels about his/herself and how he/she is able to express ideas and emotions. Although there are a number of components that contribute to social and emotional health, the four claims for this domain are both developmentally appropriate for K-3 children and are in the purview of classroom and school goals.

When thinking about emotional-social goals, it is important to view children's development as a cultural process (Gutierrez & Rogoff, 2003) which depends upon understanding how processes, such as positive relationships, develop in different cultural contexts. Schools need to reframe their approaches to recognize and take advantage of children's socio-cultural contexts. Educators too often find themselves unprepared for the diversity they are seeing in their classrooms at a time when it is no longer accepted that schooling will "work" mainly for middle-class and white students (Camburn & Han, 2011; Wildhagen, 2012). Cultural responsivity means supporting teachers to become effective at examining academic and social curriculum for bias and relevance to students' lives. It means helping teachers develop their ability to use research-based practices that are linked to success for vulnerable children. It is vital to reshape schools in ways that are responsive, rather than counter to the strengths of the children who attend. This means giving far more than token nods to culture and language. It is important to consistently contribute to knowledge of the strengths and values of diverse children and integrate them into curriculum and instructional approaches. One of the most consistent and robust findings is that teachers working in high-poverty schools who both exhibit warmth and hold high expectations for all students in their classroom have students who are more academically successful (Werner, 1996). These efforts can help make school a place where the worlds of home and school are in concert and the task of negotiating them for students is not too great.

CLAIM 1 – Students can identify and communicate about emotions in themselves and others.

Rationale

Children's ability to identify different emotions in themselves and others is a first step toward developing emotional competence (Denham, et al, 2003). Children who can recognize and communicate about their own emotions, and also emotions other people express, are more likely to be able to manage their own emotions. These children also seem to benefit in other ways. Children who are able to identify and express their emotions often have better relationships with children in their classroom and have better social skills with peers, both of which are important competencies for success in school (Arsenio, Cooperman, & Lover, 2000; Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003; Mostow, Izard, Fine, & Trentacosta, 2002). Furthermore, knowledge of emotions is positively related to teacher ratings of academic competence in middle childhood (Izard et al., 2001); perhaps because children who have greater knowledge of emotions are also better able to pay attention to emotions and to academic tasks (Trentacosta, Izard, Mostow, & Fine, 2006). Identifying and managing one's emotions is, therefore, essential to personal well-being and happiness and helps children get along better with other people. Emotional competence may also benefit children by setting the stage so they can learn academic skills and knowledge more easily.

CLAIM 2 – Students can talk about and use strategies to regulate responses to their own emotions.

Rationale

Self-regulation is defined by Blair and Diamond (2008) as the volitional behavioral and cognitive processes through which people maintain levels of motivational, cognitive, and emotional arousal that facilitate positive adaptation and adjustment, as reflected in high levels of productivity and achievement as well as positive relationships and a positive sense of self. It is what allows young children to remain focused and persistent as they meet the daily challenges in a rigorous classroom. Self-regulation is self-directed action intended to alter subsequent behavior, guide future responses, and change the probability of a future event or consequence (Barkley, 2012). The ability to self-regulate serves as an asset for children allowing them to attend more fully to instruction in the classroom. Children with greater self-regulation in kindergarten are more skilled in reading and math in later grades (McClelland, Acock, & Morrison, 2006).

Emotional regulation, or the ability to control one's emotions, is also related to children's success in school (Denham, 2006; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; Zins, Bloodworth, Weissberg, & Walberg, 2007). Children who have difficulty managing frustration or maintaining a positive attitude may also have difficulty with tasks that are important for academic learning, such as focusing attention, planning and finishing tasks,

and regulating other behaviors that are important for academic learning (Blair, 2002). Children who are better able to control their own emotions also often have better relationships with peers, another important aspect of success in school (Denham, et al, 2003). Children whose interests are nurtured, who are given opportunities to make choices, and who are not unduly controlled working to develop self-regulation are poised to succeed in school (Jang, Reeve, & Deci, 2010).

Children who do not self-regulate are in danger of entering a negative feedback loop (Blair & Diamond, 2008) where their inability to control their emotions results in poor experiences and sets them up for continuing problems. Children form patterns early in their school careers that tend to be stable and difficult to change over the course of their schooling (Alexander, Entwisle, & Dauber, 1993), and researchers report that children's patterns of engagement and achievement formed during the first three years of school may impact their ongoing success in school (Hamre & Pianta, 2001). Alexander et al. (1997) found that once students' patterns are established, their ideas about school and self take shape, subsequently fueling others to make judgments on their competence and character. It is far more difficult for a student to become re-engaged in school when early school experiences are negative (Alexander et al., 1997). Children's negative perceptions of their own competence and attitudes become stronger and harder to reverse as they progress through school (Valeski & Stipek, 2001).

CLAIM 3 − Students can form and sustain healthy relationships with adults and peers.

Rationale

Healthy relationships are characterized by mutual respect, open and effective communication, and positive regard for each other. Schools cannot accomplish their academic goals without focusing on the fundamental needs of students to engage in reciprocal caring relationships with teachers and peers (Noddings, 1992). Children and adults alike need to be understood, received, respected, and known. Caring is a way of being in relationships; it is not a set of specific behaviors and cannot be achieved by a formula or recipe. Good teaching begins with the establishment of trusting relationships that develop caring in students. To build their own capacity for caring, children need to both experience care and receive guidance and support in caring for others. Children who are motivated and connected to others in the early years of schooling are much more likely to establish positive trajectories of development in both social and academic domains (Pianta, LaParo, & Hamre, 2008).

Relationships with Adults

Positive teacher-child relationships are the foundation that allows children to explore classrooms and actively engage in learning opportunities. Emotional quality of the classroom, including warmth of adult child interactions and adults' ability to respond to children in a sensitive and individualized manner, is a consistent predictor of both reading and math skills (Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008). Children who experience close relationships demonstrate higher academic achievement, fewer disciplinary infractions, and fewer school suspensions through 8th grade (Hamre & Pianta, 2001). Children showed the largest gains in social skills and largest decreases in behavior problems when the teachers reported warmer relationships with children (Howes et al., 2008).

When children engage in episodes of disruptive behavior, teachers can respond by escalating or deescalating the behaviors (Howes & Ritchie, 2002). The emotional climate of classrooms resulting, in part, by how teachers respond to such situations can moderate the risks for early school failure (Hamre & Pianta, 2005; Pianta et al., 2008; Howes et al., 2008). At-risk children who were placed in classrooms with low emotional support were particularly vulnerable for developing conflictual teacher-child relationships (Hamre & Pianta, 2005). Furthermore, teachers may have biases that can interfere with children's abilities to form positive teacher-child relationships, particularly when the teachers' racial backgrounds are different from that of the child (Downey & Pribesh, 2004). Therefore, teachers must be aware of their own interactions with children to facilitate children's ability to form positive relationships with adults.

While teachers who focus on content delivery to the detriment of establishing close, personal relationships with their students may *deliver* more content per day, their students fail to remember and adequately *understand* this information, thus defeating the purpose of such a strong content focus. The time and effort teachers put into creating a classroom community centered on caring and mutual respect pays dividends far beyond the initial investment (Hamre & Pianta, 2001; Pianta & Stuhlman, 2004).

Relationships with Peers

Development results from the interaction between a child and his/her environment. Children do better when the environment provides opportunities to practice developmental tasks in the context of emotional and social support (Pianta & Walsh, 1996). According to Johnson (1981), "Experiences with peers are not a superficial luxury to be enjoyed during lunch and after school. Constructive student-student relationships are a necessity for maximal achievement, socialization, and healthy development" (p. 5). Results from over 600 research studies that have investigated learning in cooperative, competitive, and individualist goal structures have indicated students learn more, are more highly motivated to learn, enjoy learning more, feel more positive towards the subject being studied, have increased positive regard for their teachers, and are more accepting of one another when they work together with peers as opposed to working competitively or individually (Johnson & Johnson, 2013).

CLAIM 4 − Students can use appropriate social skills to interact with adults and peers in school.

Rationale

Social skills are behaviors and knowledge that facilitate a child's ability to interact effectively with others including the knowledge of and ability to behave in ways that are consistent with commonly accepted rules and norms for interacting with others. When children work together, they have the opportunity to learn how to interact effectively with each other. They come to realize that others also have a sense of what they want and how they want to do things that may differ from their own (Gallagher & Sylvester 2009). They have the opportunity to work through options with one another, problem-solve, and begin to engage in compromise. As children work together: their strengths emerge, they become known for their specialized contributions, and they come to recognize strengths offered by others.

Collaboration is becoming an increasingly important life skill for young learners and is essential for language, cognitive, social, and emotional development. When children work with their peers on projects, center tasks, and learning activities; they must practice social skills that require empathy, perspective taking, sharing, conflict-negotiation, persuasion, and diplomacy (Bernard, 1991). Collaboration also serves an important role in the development of self-concept and self-esteem as children: learn about themselves through the eyes of others, engage in self-reflection, imitate desirable characteristics and behaviors, and experience success (Tsay & Brady, 2010; Slavin, 1990). Additionally, time for collaboration provides opportunity for more capable peers to scaffold the learning of less capable peers while simultaneously reinforcing their own knowledge through the process of articulating their thinking (Fawcett & Garton, 2005). Structuring learning activities in such a way provides an efficient means for teachers to support young learners as they gain and practice new knowledge and skills in all developmental domains.

DEFINITION

The domain of Health and Physical Development focuses on physical growth and motor development, sound nutritional choices, self-care, and health/safety practices. This domain is the foundation for the future health and well-being of all children. Good physical health and motor development supports children's learning and plays a part in their ability to be successful in almost any type of activity.

OVERALL RATIONALE

Physical growth, motor development, and heath are central to children's learning and are fundamental to a lifelong, healthy, and active lifestyle. Health programs can reduce the prevalence of health risk behaviors among young people and have a positive effect on academic performance (Basch, 2010). In addition, regular physical activity has been shown to result in the prevention of many health risks (Ball & McCargar, 2003). The claims regarding Health & Physical Development encompass the conceptual knowledge needed for supporting healthy behaviors and the application of skills in authentic situations.

CLAIM 1 – Students can demonstrate conceptual knowledge to support healthy behaviors and the reduction of health risks.

Rationale

A key goal of the health and physical domain is to help students adopt and maintain healthy behaviors. Understanding basic health concepts and functional health knowledge contributes to the development of health literacy and serves as the foundation for the development of health-enhancing behaviors (Joint Committee on National Health Education Standards, 2007). Health literacy is defined as the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions (Patient Protection

and Affordable Care Act, 2010). It is important to begin the development of understanding and accessing key health information and concepts at an early age. Researchers report that 9 out of 10 adults have difficulty using health information that is commonly available through a variety of sources (Kutner, Grenber, Jin, & Paulsen, 2006). If children and adults do not have a clear understanding of health information, they are less likely to appropriately seek help when needed, utilize available and accessible prevention measures, and appropriately manage chronic diseases (Rudd, Anderson, Oppenheimer, & Nath, 2007).

Understanding basic health concepts and functional health knowledge goes beyond memorization of health facts and body systems; it is the kind of health knowledge that can be used to organize principles and classify, analyze, generalize, and organize health information. These concepts can be applied to a variety of health-based decisions and actions. Health education programs can contribute directly to a student's ability to successfully adopt and practice behaviors that protect and promote health and avoid or reduce health risk (Joint Committee on National Health Education Standards, 2007). The Centers for Disease Control and Prevention identifies the following as priority adolescent risk behaviors that contribute to the leading causes of death and disability among youth and adults: alcohol and other drug use, injury and violence (including suicide), tobacco use, poor nutrition, inadequate physical activity, and sexual risk behaviors (CDC, 2013).

CLAIM 2 – Students can develop skills that contribute to healthy behaviors and reduction of health risks.

Rationale

While Claim 1 focuses on knowledge, Claim 2 focuses on behavior. The National Health Education Standards define health skills as accessing information and resources, decision making, goal setting, advocacy, interpersonal communication skills, and analyzing influences.

Health education has evolved from a primarily knowledge-based approach to a combination of concepts and skills-based approach to an instructional design and focused assessment. Effective instruction in health education goes beyond basic knowledge and provides opportunities for students to analyze social influences, attitudes, values and norms, and skills that influence health-related behaviors (CDC, 2013). Claim 2 focuses specifically on the development of these health skills. Instruction and assessment in health education should allow students to apply skills in authentic situations that allow for modeling, practicing, and feedback (CDC, 2013). This practice and feedback approach, in a safe environment, allows for the development and refinement of these skills and provides a foundation and sense of confidence for future use.

CLAIM 3 – Students can demonstrate competencies in motor skills and movement patterns.

Rationale

Claim 3 focuses on competencies (abilities to independently and safely participate in movement skills and to maintain a level of continuity in those skills that would make participation enjoyable) in motor skills and movement patterns. Fundamental motor skills are the building blocks of physical literacy. Skills include basic gross motor movements (e.g., throwing, kicking, running, jumping, hopping, and catching) and fine motor movements (e.g., small object manipulation and use of small writing tools). Movement patterns involve applying motor skills and the ability to use motor skills in combination with one another. To be physically literate includes the ability to move with poise and confidence across a wide range of activities (Mandingo, Francis, & Lodewyk, 2009). Motor skills needed to produce various movement patterns take years to develop and require specific experiences and instruction. Children who leave elementary school without a strong foundation of motor skills are left behind in the same way that children are *left behind* when they leave without the prerequisite language or mathematical skills (Clark, 2007).

Fundamental motor skills are an important stepping stone in motor development and lifelong physical activity. In the elementary grades, foundational motor skills enhance children's social, cognitive, and physical development and increase the likelihood of continued interest and participation in physical activity (NASPE, 2001). Fundamental motor skills are precursors to context-specific and skillful movement, where children must acquire competency in these skills and apply them in different contexts such as sports or lifetime fitness activities (Clark & Metcalfe, 2002). Extensive scientific evidence demonstrates that regular physical activity promotes growth and development in youth and has multiple benefits for physical, mental, and cognitive health (National Research Council, 2013).

Motor skill development plays an integral role in the early years when growth, development, and learning frequently center on play and the physical activity associated with it (Williams & Monsma, 2006). Motor skills are also important determinates of our ability to participate in our culture. Participation in structured physical activities and sport provides youth opportunities to actively participate in their culture and meet their personal needs for challenge, self-expression, social interaction, and enjoyment (Barton, Fordyce, & Kirby, 1999).

Student success in developing fundamental motor skills varies from student to student and development is age related, not age dependent. Teaching of fundamental skills must be developmentally appropriate and sensitive to individual needs and abilities (Mandingo, Francis, & Lodewyk, 2009). Children need time to develop more advanced movement patterns, especially in the fundamental or *building block* skills; without this base, competency in more complex, sport-related versions of these motor patterns will be difficult (NASPE, 1995).

Competency in a variety of motor skills and movement patterns is an important component in being physically active and becoming a lifelong mover. Physical activity is related to lower body fat, greater muscular strength, stronger bones, and improvements in cardiovascular and metabolic health, as well as to improvements in mental health by reducing and preventing conditions, such as anxiety and depression, and enhancing self-esteem (National Research Council, 2013). Schools play a vital role in providing the environment and opportunities for children to develop these valuable skills.

DEFINITION

The Language Development and Communication domain focuses on the foundational skills that children acquire and use in early elementary school and which continue to develop throughout their schooling. These skills include speaking, listening, reading, and writing. This domain encompasses nonverbal and verbal language skills used in understanding language and speaking effectively with others as well as important emergent literacy skills in early reading and writing. This domain provides an integrated approach for understanding and supporting language and literacy development in young children.

OVERALL RATIONALE

The importance of acquiring and developing language and communication competencies is evident for future success in school and in society. The development of these early competencies is essential to later learning (Snow, Burns, & Griffin, 1998), can predict future school achievement (National Reading Panel, 2000), and is fundamental to future success in both school and life (Neuman, Copple, & Bredekamp, 2004). The claims encompassed within this domain designate integrated foundational skills that provide the basis for children to acquire, apply, and continue to develop language and communicative abilities in increasingly complex ways and across the contexts of home, school, and community.

There are two important contextual implications for the Language Development and Communication domain. First is the notion of multiple settings – *home, school, and community* – as an inclusive context for the acquisition and continued development of language and communication. It is important to consider this triad of settings as the context in which children demonstrate understanding and application of knowledge and skills. Bronfenbrenner (2009) described multiple settings as nested Russian dolls – each inside the next with the innermost doll representing the developing person – then the home, school, and community. Furthermore, Bronfenbrenner (2009) reported that when we limit our observation and attention to one setting, for example school, we risk underestimating children's strengths and capacities. Therefore, this domain focuses on the broader context of home, school, and community and the necessary interconnection between these settings as we support children in *connecting the language and communication used in the home and community with the language and communication required for success in school*.

The second contextual implication for this domain is that children acquire and develop speaking, listening, reading, and writing in *increasingly complex ways*. This model of growth and development can be conceived by thinking of an expanding balloon. Beginning with a breath of knowledge (or a puff of air), the balloon *expands in all directions simultaneously* up, out, and around three-dimensionally as knowledge grows rather than in a linear one-dimensional fashion. This three-dimensional growth model is referred to throughout the claims when describing the ways children acquire and continue to develop speaking, listening, reading, and writing skills.

CLAIM 1 – Students can use and continue to develop effective listening and communication skills (e.g. verbal and non-verbal) for a range of purposes, audiences, and settings/contexts in increasingly complex ways.

Rationale

Children need to be able to listen carefully to a variety of language genres, including extended discourse (multiple sentences within a dialogue and narrative with adults and peers), and then children need to be able to communicate in ways that are understandable to both adults and children. These combined skills are foundational for later learning and literacy at home and at school (Snow, Burns, & Griffin, 1998). As most children enter school, these skills are well established within their home and community and must be adapted for the context of school. For some children this transition is relatively easy, particularly if they come from an environment where communication patterns are aligned with the communication patterns expected in school.

However, some children come to school with rich language at home and in the community that may not be as aligned with the context of school (Heath, 1983; Vernon-Feagans, 1996). For instance, some communities value dynamic, overlapping communication, where multiple speakers speak or jump into the conversation at the same time. Yet, school conventions require children to wait their turn, speak one-at-a-time, and often communicate directly to the teacher or adult. Children who do not have extensive practice with such turn-taking routines will benefit from explicit instruction in listening and communicating in order to learn and understand the conventions of school.

For example, low-income children, rural children, English language learners as well as children who speak African American English in the home, all come to school ready to learn and have acquired complex vocabulary and narrative skills; however, these skills may not transfer to the school context (Vernon-Feagans, 1996). As a result, these children often exhibit lower vocabulary and communication skills relative to their peers from homes where language is more closely aligned with the language required for success in school. This academic vocabulary gap is linked to lower performance in reading and other areas (August,

Carlo, Dressler, & Snow, 2005), not because these children possess poorer listening or communication skills, but rather because they have yet to acquire and master the conventions of listening and communicating in school. Children also benefit from some instruction that recognizes their "home" communication patterns (Tharp & Gallimore, 1988) and use these patterns as a resource for learning new concepts and skills within the context of the Standard Course of Study across subject areas.

Children's listening and communication skills also include the comprehension and production of nonverbal communicative skills (e.g., eye gaze, gestures). Children's nonverbal communication, often coupled with verbal communication, conveys substantive information about their thoughts that are not expressed in speech alone (Goldin-Meadow & Sandhofer, 1999). For example, while explaining a math equation on the board, a child may answer the question incorrectly through spoken language, yet demonstrate that they understand the concept through the hand gestures they produce, such as indicating balance and that both sides are equal (Goldin Meadow, Cook, & Mitchell, 2009). In addition to their ability to communicate nonverbally, children must also be able to understand and appropriately respond to others' nonverbal communication. A child who follows the point or eye gaze of another person is demonstrating that they understand the communicative intent of the speaker (Behne, Carpenter, & Tomasello, 2005; Palmquist & Jaswal, 2012). This important skill provides valuable insight into children's ability to successfully navigate communicative interactions and master the language and communication conventions required for success in school.

In sum, all children need to listen carefully to the details of instruction in the classroom and increasingly be able to ask and answer questions. In particular, children must be able to recognize when they do not understand and find ways to both verbally and nonverbally gain access to the information they need to learn. School should provide the opportunity for all children to communicate at length and complexly with diverse children and adults in a supportive way that provides scaffolding for both listening and communicating.

CLAIM 2 – Students can acquire and integrate vocabulary, concepts, and the structure of language in increasingly complex ways.

Rationale
Children's ability to communicate and understand language is driven largely by their understanding of words and concepts and how to use them within the structure of language. They must be able to acquire and continue to develop, through their experiences, an understanding of words and concepts and know how words can be grouped together to both comprehend and effectively communicate meaning. In a school setting, successful communication and meaningful comprehension is dependent upon students' ability to access the vocabulary or language used by their teachers and peers and in curricular materials across disciplines.

In 1998, the National Research Council (NRC) concluded that vocabulary acquisition and development should be among the top priorities for all students, particularly throughout elementary school (Snow, Burns, & Griffin, 1998). In a similar report, the National Institute of Child Health and Human Development (2004) concluded that enlarging a child's vocabulary, both oral and print, is an important part of reading development (Bornstein et al., 2004). Vocabulary is a predictor of future reading achievement (Cunningham & Stanovich, 1997) and being able to both identify and understand words contributes to overall reading comprehension. In addition to these major findings, researchers have surmised, across areas of study, that children's learning is dependent upon their understanding of words and concepts (Durham, Farkas, Hammer, Tomblin, & Catts, 2007; Muter, Hulme, Snowling, & Stevenson, 2004).

Opportunities for school success increase as students learn the meaning of words, how to pronounce and use words in academic settings, and how to recognize and comprehend words in text. This metalinguistic ability, to think about and make word choices, develops as early as age three and continues throughout schooling (Snow, Burns, & Griffin, 1998).

Vocabulary assessment and instruction are critically important. Children learn vocabulary incidentally in their homes and at school. However, in the context of school, research has shown that vocabulary instruction is often fragmented between content areas (White & Kim, 2009). The National Reading Panel (NRP, 2000) states that vocabulary building in young children is most effective when they are exposed to purposeful vocabulary instruction that incorporates active engagement beyond definitional knowledge as well as repeated and frequent exposures to terms and concepts across various contexts. These research-based methods have shown that children, whether having initial small or large vocabularies, are able to acquire new words at about the same rate (Biemiller, 2003).

In the case of English language learners, for example, vocabulary development in English and in their home language appears to lag behind when compared to monolingual norms (Bialystok, Luk, Peets, & Yang, 2009). However, given enough time and purposeful instruction in the vocabulary needed in school, English language learners can catch up to monolinguals (Hammer, Lawrence, & Miccio, 2008). Thus, providing word-learning instruction for all students across academic domains increases successful vocabulary development and related school performance. However, simply drilling students on vocabulary is not enough to result in a deep understanding of words (Stahl & Fairbanks, 1986). The National Research Council recommends that young children learn language structure and vocabulary in an integrated rather than isolated fashion through adult-child shared book reading experiences, activities that direct attention to the phonological structure of spoken words, and activities that highlight the relationship between print and speech (Snow, Burns, & Griffin, 1998). In addition, vocabulary experts suggest that wide reading of a variety of texts, purposeful teaching of words and word learning strategies,

and strategies to enhance students' consciousness of words improve learning (Felman & Kinsella, 2005).

"Vocabulary is not an end in itself. A rich vocabulary makes the skills of listening, speaking, reading, and writing easier to perform" (Nation, 1994, pg. viii). Students who acquire and possess a large vocabulary are often able to think more deeply, express themselves more clearly, and learn new concepts more readily. Thus, vocabulary learning should be viewed as a natural and lifelong process (Bintz, 2011). By assessing and monitoring children's early understanding of word meanings, teachers and schools can help all students achieve similar levels of language and reading comprehension and take steps toward improving overall academic performance (Biemiller, 2003).

CLAIM 3 – Students can acquire the foundational skills for reading and integrate these skills for comprehending increasingly complex texts.

Rationale

Students in grades K-3 are building and honing the capacities necessary to become literate individuals. The acquisition of literacy involves the development of reading skills and of concepts about the nature of literacy, i.e. what it means to be literate (Chall, 1983). In order to develop literate capacities, students must learn to orchestrate foundational reading skills and understand what it means to be literate in a variety of settings, including school. This requires an expanded notion of literacy as students enter the world of schooling and experience *school literacy* for the first time. Depending upon how closely their home and prior literacy experiences align with school literacy, this transition varies, yet all children will experience some adjustment from home to school in language and literacy development (Heath, 1983).

The ability to comprehend a wide range of increasingly complex texts is central to acquiring the capacities of a literate individual. According to Torgesen (1998), "adequate reading comprehension is the most important ultimate outcome of effective instruction in reading" (p.33). Learning to read is a complex process that requires young children to acquire and continue to develop automaticity with foundational skills – print concepts, phonological awareness, phonics, word recognition, and fluency, as well as language processes that together build their capacity to comprehend a variety of written texts (National Early Literacy Panel, 2009; National Reading Panel, 2000). One does not precede or preclude the other; integrated learning increases and affects the acquisition of both reading foundational skills and comprehension skills (Clay, 1991). Successful readers can integrate the sound, visual, and meaning systems of language to monitor comprehension and repair misunderstandings and apply their understandings to a range of increasingly complex texts in a variety of settings.

Reading skill is acquired in a relatively predictable way by most children who have experiences prior to entering school that align closely with *school literacy* (Snow, Burns, & Griffin, 1998). Although all children come to school ready and eager to learn,

some children can face delays in reading when their language and experiences prior to school are not as closely aligned with language and literacy experiences required for success in school. Most reading problems faced by today's adolescents and adults are the result of problems that might have been avoided or resolved in their early childhood years and/or a result of less than optimal classroom instruction (Torgesen, 1998). The National Research Council estimated that if children received exposure and systematic opportunities to develop foundational language, reading, and related skills during early schooling, only about five percent might experience serious reading difficulty later in school (Snow et al., 1998). It is imperative that steps be taken early to identify children's strengths and challenges in reading so that they can overcome obstacles during the primary grades. Making sure that all children can attain their potential in early reading is essential for later learning. Reading failure in the early grades is the greatest predictor of both later failure in school and school dropout (National Reading Panel, 2000).

Students in North Carolina, who are ready for college and career, can, as they progress through school, independently read and comprehend texts of increasing complexity, at high levels of proficiency, and at a rapid rate. As children receive instruction that is *geared to their skill level* and they *have adequate practice and access to increasingly complex literature and informational text*, they acquire the ability to comprehend increasingly complex reading material that will result in continued learning across home, school, and community.

CLAIM 4 – Students can acquire the written communication skills that empower students to express their ideas, opinions, and knowledge for a range of purposes and audiences.

Rationale

In everyday contexts, we use writing for advocacy, writing letters, social media, lists, and job applications, among many other purposes. In school, children are expected to write essays, stories, letters, responses to questions, and more. Children, including children in grades K-3, use writing to think, to problem-solve in mathematics, or plan a science experiment, for example. In addition, writing itself is a cognitive process that enables children to explore and to articulate their thoughts, ideas, opinions, and knowledge. As Dyson (2002) suggests, it is also an inherently social process in which the children progressively "differentiate and manipulate the elements of the written system (e.g. letters and words) in order to engage with, and manipulate, the social worlds" (p. 126).

Developmentally, oral language precedes writing. Speech guides children's use of symbolic tools even before they begin using alphabetic writing (Vygotsky, 1978). As children acquire oral language they begin to understand the symbolic relationship between oral and written language. Initially, very young children's early written productions often are not intended to represent a particular word. For example, children might complete a page with squiggly lines just to imitate the act of writing.

Subsequently, children come to represent meaning by varying the number and variety of letters depending on the characteristics of the symbolic relationship (Ferreiro & Teberosky, 1979; Levin & Tolchinsky, 1989). For example, children might write an approximation of the word "snake" with more letters than an approximation of "ant" because a snake is longer than an ant. Gradually, children start to understand the correspondence between the length of words and phrases and the marks on the paper. At first, this correspondence is global and slowly becomes more articulated between the parts of what the child attempts to read and the parts of the written text (Tolchinsky, 2006). Children begin to attend to "the basic alphabetic principal [which] requires an awareness that spoken language can be analyzed into strings of separate words, and words in turn, into sequences of syllables and phonemes within syllables" (Snow, Burns, & Griffin, 1998, p. 15). During this process, the development of reading and writing proceed together, each informing the other.

Simultaneously, children acquire knowledge of written genres. From a young age, they demonstrate approximations of appropriate written language genres (Donovan & Smolkin, 2006), such as storybooks (Sulzby, 1985) and informational genres (Donovan, 2001; Kamberelis, 1999). Recent work by Donovan and Smolkin (2011) outlines the development

trajectory of elementary students' information writing which begins with labeling and progresses to information reporting that uses evidence. In addition to paying attention to different genres, children also need to consider the content and goals of what they will write, the audience, the spelling of words, and their handwriting or keyboarding control. Thus, writing requires an orchestration of different tasks and abilities which puts heavy cognitive processing demands on children (McCutchen, 2006).

Since the cognitive processes involved in writing are socially constructed, they manifest in different ways depending on the writing goals and tasks. Children from different communities may participate differently in writing activities in their homes and communities. Hence, children will arrive at school with different strengths and needs, and therefore their developmental process can take different forms (Heath, 1996, 1983; Heath, 2012; Rogoff, 2003). For example, English language learners draw from skills and knowledge learned in their first and second language when writing (Gort, 2012). Heath (1996, 1983) found that children from different communities bring different strengths to the writing process and Gonzalez, Moll, & Amanti (2005) observed that students draw from different funds of knowledge as they learn to write.

Because the development of writing is interrelated with other areas of development, assessment of students' writing has the potential to inform understanding of other dimensions of children's lives. For example, for some children, reading their own writing precedes reading conventional texts. Writing samples can give teachers important information regarding children's reading skills such as phonological awareness, knowledge of print, and alphabet knowledge (Vernon & Ferreiro, 1999). Writing about their own social and emotional experiences can provide teachers insights about children's socio-emotional well-being (Dyson, 2001). The fine motor and hand-eye-ear coordination skills necessary for writing are an important area of physical development. Problem-solving involved in writing relates to cognitive development. As a result, writing as a means for assessment should never be considered in isolation from other developmental domains.

"Learning to read and write is critical to a child's success in school and later in life. One of the best predictors of whether a child will function competently in school and go on to contribute actively in our increasingly literate society is the level to which the child progresses in reading and writing" (Neuman et al., 2004, p. 1). As children write for every day, school, and subject- or task-specific purposes, they learn to express ideas, experiences, interests, and emotions and simultaneously have opportunities to learn the conventions of the written language and to practice the orchestration of the different demands required in the writing process.

NEXT STEPS

The plan for developing and implementing the K-3 formative assessment process includes three phases. The Think Tank's report represents the first stage of outlining a vision for this endeavor and establishing claims about the knowledge, abilities, and approaches toward learning that are most essential for children to develop during kindergarten through third grade. In the second phase, an Assessment Design Team will translate the vision into an assessment process, through designing, piloting, feedback, and multiple iterations in schools across North Carolina. In the third phase, an Implementation Design Team will plan for scaling up the K-3 formative assessment process across North Carolina in a manner that is sustainable. The work will not conclude at that point, however. The K-3 formative assessment process will be continuously improved in future years based on feedback from teachers, parents, students, and other stakeholders.

Stakeholder engagement is crucial to the success of this endeavor. Therefore, numerous strategies will be intentionally designed to gather stakeholder input that will inform and guide implementation. For example, an advisory group of teachers and administrators will be convened, teacher surveys distributed, and focus group sessions held with teachers, administrators, families, and other community stakeholders.
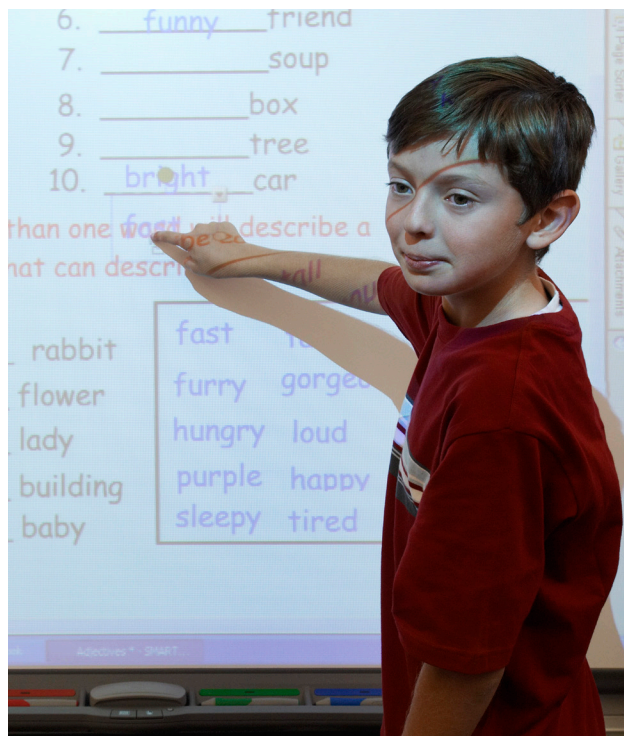
CONCLUSION

The success of the K-3 formative assessment is dependent on a number of factors. In order for this formative assessment process to improve educational opportunities for children, schools must be ready and resourced to provide opportunities for each individual child. Schools will best support children's development and learning when staffed with teachers and administrators who understand child development and the ways in which young children learn. Children will thrive in classrooms with teachers who:

1. understand that every child is unique;
2. base instructional decisions on what is developmentally, culturally, and linguistically appropriate; and
3. adapt educational experiences to the ages, experiences, interests, and abilities of individual children within the classroom.

Designing learning opportunities that appropriately challenge children in the early grades also requires that administrators and teachers are knowledgeable about assessment strategies appropriate for young children. Assessment that occurs in the context of instruction and learning and uses evidence gathered from a variety of sources (e.g., work samples, conversations, observations) is consistent with recommended practices and provides the best opportunity for children to demonstrate what they know and are able to do (NRC, 2008). Understanding what children know and are able to do enables teachers to plan instruction that meets children where they are, as individuals and as a group, and helps each child reach challenging and achievable goals that contribute to his/her ongoing development and learning.

STANDARDS ALIGNMENT

Given the foundational nature of these claims, each claim involves fundamental skills and capacities relevant to all learning standards.

Category	Claim	Description	Early Learning and Development Standards	Arts	ELA	English as a Second Language	Guidance	Healthful Living	Math	Science	Social Studies
Approaches to Learning*	CLAIM 1	Students can effectively solve problems by defining goals, describing steps, and evaluating alternative strategies in both academic and social interactions.	X	X	X	X	X	X	X	X	X
Approaches to Learning*	CLAIM 2	Students can maintain focus and persevere to accomplish collaborative and individual tasks whether those tasks are chosen by them, or assigned to them.	X	X	X	X	X	X	X	X	X
Approaches to Learning*	CLAIM 3	Students can demonstrate curiosity by seeking opportunities – whether independently or in collaboration with peers and teachers – to extend their knowledge.	X	X	X	X	X	X	X	X	X
Cognitive*	CLAIM 1	Students use content-independent abilities and strategies and content-specific skills, processes, and approaches to solve problems and acquire information.	X	X	X	X	X	X	X	X	X
Cognitive*	CLAIM 2	Students make connections to prior learning, construct knowledge, and demonstrate their understanding using multiple modes of expression.	X	X	X	X	X	X	X	X	X
Cognitive*	CLAIM 3	Students come to understand themselves as learners and acquire dispositions (attitudes, beliefs, and values) that support their academic engagement.	X	X	X	X	X	X	X	X	X
Emotional-Social	CLAIM 1	Students can identify and communicate emotions in themselves and others	X		X			X			
Emotional-Social	CLAIM 2	Students can talk about and use strategies to regulate responses to their own emotions.	X				X	X			
Emotional-Social	CLAIM 3	Students can form and sustain healthy relationships with adults and peers.	X				X				X
Emotional-Social	CLAIM 4	Students can use appropriate social skills to interact with adults and peers in school.	X	X	X	X	X	X	X	X	X
Health & Physical	CLAIM 1	Students can demonstrate conceptual knowledge to support healthy behaviors and the reduction of health risks.	X				X	X			
Health & Physical	CLAIM 2	Students develop skills that contribute to healthy behaviors and reduction of health risks.	X					X			
Health & Physical	CLAIM 3	Students can demonstrate competencies in motor skills and movement patterns.	X					X			
Language & Communication	CLAIM 1	Students can use and continue to develop effective listening and communication skills (e.g. verbal and non-verbal) for a range of purposes, audiences, and settings/contexts (like home, school, and community) in increasingly complex ways.	X		X	X					
Language & Communication	CLAIM 2	Students can acquire and integrate vocabulary, concepts, and the structure of language in increasingly complex ways in home, school, and community.	X		X	X					
Language & Communication	CLAIM 3	Students can acquire the foundational skills for reading and integrate these skills for comprehending increasingly complex texts in home, school, and community.	X		X	X					
Language & Communication	CLAIM 4	Students can acquire the written communication skills that empower students to express their ideas, opinions, and knowledge for a range of purposes and audiences including home, school, and community.	X		X	X					

NC STANDARD COURSE OF STUDY

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Alesia Burnette – Elementary & Title I Director
Christopher Smith – Principal
April Weaver – 3rd Grade Teacher
Lea Anne Thomas – Principal
Laura Jane Hunter – Kindergarten Teacher

RICHMOND COUNTY SCHOOLS
Debbie Wrenn – Principal
Wendy Jordan – Principal
Dawn Terry – Principal
Joyce McRae – Principal
Angela Watkins – Principal
Julian Carter – Principal
Joann Taylor – Kindergarten Teacher
Lora Lea Martin – Kindergarten Teacher
Charlene Vallance – 2nd Grade Teacher
Jackie Huggins – 2nd Grade Teacher
Amy Tadlock – AIG Teacher
Kim LeBerth – AIG Teacher

BERTIE COUNTY SCHOOLS
Kristy Bracy – 1st Grade Teacher
Penny Price – 2nd Grade Teacher
Nicole Hayes – Instructional Coach
Mona Gilliam – Principal

MARTIN COUNTY SCHOOLS
Susan Peele – Curriculum & Instruction Director
Susan Whitehurst – Kindergarten Teacher
Lizabeth Tiger – 1st Grade Teacher
Renee Griffin – 2nd Grade Teacher
Lori Dozier – 2nd Grade Teacher
Tammy Hayes – 3rd Grade Teacher
Serena Paschal – Principal

HICKORY PUBLIC SCHOOLS
Elizabeth Rollins – Pre-K Teacher
Cori Newman – Kindergarten Teacher
Hope Wike – Kindergarten Teacher
Stephanie Ashely – 1st Grade Teacher
Stacey Hoke – 1st Grade Teacher
Meredith Clay – 2nd Grade Teacher
Kim Heckler – 2nd Grade Teacher
Anna Gilbert – 3rd Grade Teacher
Melissa Park – 3rd Grade Teacher

WAKE COUNTY PUBLIC SCHOOL SYSTEM
David Copperwheat – 3rd Grade Teacher
Jamie Gray – First Grade Teacher
Tommy Hager – P.E Teacher
Julie Zenkle – P.E. Teacher
Julie Scott – Assistant Principal
Brandon Mize – Instructional Resource Teacher
Stacy Bigham – K-5 Literacy
Cindy Seder – Assistant Principal

NEW HANOVER COUNTY SCHOOL
Katie Griswold – Kindergarten Teacher
Muffy Smyth – Counselor
Kristi Harper – 2nd Grade Teacher
Paul Slovik – Assistant Principal
Kristine Branch – Intensive Behavior Support Teacher

ASHEVILLE CITY SCHOOLS
Meg Sanford – Kindergarten Teacher
Susan McMillan – Kindergarten Teacher
Juanita Mitchiner – 2nd Grade Teacher
Teah Hartman – 2nd Grade Teacher
Holly Gregg – 3rd Grade Teacher
Anne Hardy – District Coach
Ruafika Cobb – Assistant Principal

CHAPEL HILL - CARRBORO CITY SCHOOLS
Carolyn Walker – Instructional Coach
Pat Hawkins – Intervention Specialist
Sharla Coleman – 2nd grade Teacher
Courtney Sears – 2nd grade Teacher

DUKE CENTER FOR CHILD & FAMILY POLICY STAFF

Christina Christopoulos, PhD. – Research Scholar

Mark Muenchau – M.P.P. Candidate

Jeff Quinn, M.P.H. – Research Analyst

Carol Ripple, Ph.D. – Senior Research Scientist

Katie Rosenbalm, Ph.D. – Research Scholar

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Jami Graham, M.S.A. – Region 4 RTT-ELC Education Consultant

Jody Koon, M.S. – Early Education Consultant

Karen Lounsbury, M.Ed. – Region 7 RTT-ELC Education Consultant

Amy Scrinzi, Ed.D. – RTT-ELC Lead Consultant

Leslie Simmons, M.Ed. – Region 2 RTT-ELC Education Consultant

Dan Tetreault, M.Ed. – RTT-ELC Lead Consultant

Catherine Woodall, M.Ed. – Region 1 RTT-ELC Education Consultant

NOTES